

# What's New Since 2015

## CHAPTER 2 STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

**“2018 SPEC BOOK”**

THE 2018 SPEC BOOK IS NOW THE GOVERNING DOCUMENT ON ALL  
MnDOT SIGNAL AND LIGHTING PROJECTS

STANDARD  
SPECIFICATIONS  
FOR  
CONSTRUCTION

MANY ITEMS THAT WERE IN THE MnDOT SPECIAL PROVISIONS FOR  
THE 2016 SPEC BOOK HAVE BEEN MOVED TO THE NEW 2018 SPEC  
BOOK

2018 EDITION

**“2018 SPEC BOOK”**

THE 2018 SPEC BOOK WRITING STYLE IS  
PLAIN LANGUAGE  
ACTIVE VOICE/ IMPERATIVE MOOD

COMPLETE, CORRECT, CLEAR, CONCISE, CONSISTANT

2565.3 G.1  
PROVIDE PREFORMED RIGID PVC OR SAW- CUT INDUCTIVE  
LOOP DETECTORS AS REQUIRED BY THE CONTRACT.  
*IN THIS WRITING FORMAT THE CONTRACTOR IS ASSUMED.*

**“2018 SPEC BOOK”**

STANDARD  
SPECIFICATIONS  
FOR  
CONSTRUCTION

THE STANDARD SPECIFICATIONS FOR CONSTRUCTION WILL BE  
UPDATED EVERY FIVE YEARS. NEXT UPDATE JUNE 2020

2018 EDITION

**“WHAT’S NEW SINCE 2015”**

2545 & 2565  
**Pay Item Extensions**  
2565.5 BASIS OF PAYMENT

The Department will pay for new traffic control signal systems on the basis of the following schedule:

Item No:	Item:	Unit
2565.501	Emergency Vehicle Preemption System	lump sum
2565.501	Traffic Control Interconnect	lump sum
2565.502	APS Push Button Station	each
2565.502	APS Push Button and Sign	each
2565.502	APS Cabinet Control Unit	each
2565.502	APS Pole Mounting Adaptor	each
2565.502	APS Push Button Mounting Spacers	each
2565.516	Traffic Control Signal System	system

This change in pay item extensions (last 3 digits) was made so all pay items have consistent extensions with regards to lump sum, each, system, and other extension unit naming.

**“WHAT’S NEW SINCE 2015”**

The 2020 Spec Book 3842 “Electrical Systems Compounds and Lubricants”  
clarifies the three very different compounds  
**Anti Seize, No Ox, And Ferrous Metal Electrically Conductive Compound**





## What's New Since 2015 CHAPTER 3 STANDARD PLATES

MnDOT is working on moving all of our details to either Standard Plans or Standard Plates.

The general definition of a standard plan is for something constructed in the field.

The general definition of a standard plate is for something constructed at a manufacturing facility.

## What's New Since 2015 CHAPTER 9 EXCAVATION AND BACKFILL

### What's New Since 2015

#### New -2018 Spec. Book Language Change For 2451.3.D Backfilling and Compacting Excavations

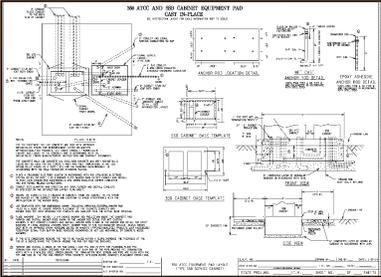
**Old**  
Uniformly distribute suitable backfill materials in layers no thicker than **8 inch loose measurement**. Compact the backfill.....

**New**  
Uniformly distribute suitable material in horizontal layers of no more than **6 inch compacted layers**.



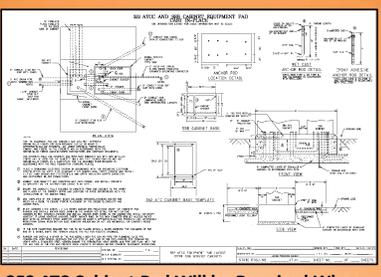
## What's New Since 2015 CHAPTER 10 FOUNDATIONS AND EQUIPMENT PADS

### "WHAT'S NEW SINCE 2015"



**The New 350 ATC Cabinet Pad is Required in 2020**

### "WHAT'S NEW SINCE 2015"



**The New 352 ATC Cabinet Pad Will be Required When an Agency Wants to Use a Single Wide Cabinet**

**"WHAT'S NEW SINCE 2015"**

There will soon be revised standard plates for Design E and H Foundations  
There will be a new Design P Standard Plate.

**"WHAT'S NEW SINCE 2015"**

**SPECIAL REQUIREMENTS WHEN A FULL LENGTH FIBER FORMING TUBE IS USED FOR MAST ARM PA POLE FOUNDATIONS**

**"WHAT'S NEW SINCE 2015"**

**NEW INSTALLATION REQUIREMENTS FOR PRECAST CONCRETE LIGHT FOUNDATIONS DESIGN E AND DESIGN H**

**"WHAT'S NEW SINCE 2015"**

**STEEL SCREW IN LIGHT FOUNDATIONS DESIGN E AND H AND INSTALLATION REQUIREMENTS.**

**"WHAT'S NEW SINCE 2015"**

**SPECIFICATION LANGUAGE FOR LIGHT POLE FOUNDATION GRADING ON ROADSIDE SLOPES.**

**FOUNDATION GRADING ON ROADSIDE SLOPE DETAIL**

**"WHAT'S NEW SINCE 2015"**

**RLF EQUIPMENT PAD DETAIL HAS BEEN CONVERTED INTO STANDARD PLATE 8107 WITH THE OPTION TO USE PRECAST**

**TYPE RURAL LIGHTING AND FLASHER (RLF) SERVICE CABINET**

**What's New Since 2015**

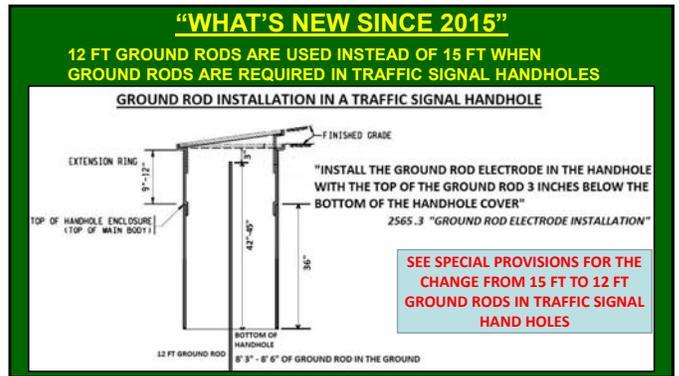
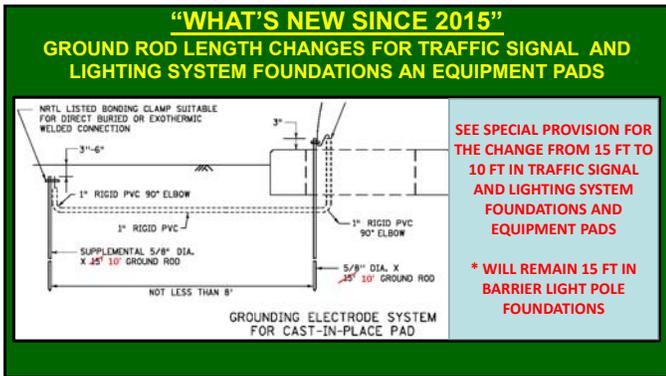
**CHAPTER 12**  
**HANDHOLES, PULLING VAULTS**  
**AND**  
**JUNCTION BOXES**



**What's New Since 2015**

**CHAPTER 13**  
**GROUNDING AND BONDING**

- “WHAT’S NEW SINCE 2015”**  
**GROUNDING FOR HIGH MAST LIGHTING TOWERS**  
**HAS BEEN CHANGED**
- F.3.a Grounding Systems for Mat Foundations**
- (1) Lightning protection conductors specified on the Plan
  - (2) Four 10 foot ground rod electrodes in accordance with 3818 per foundation
  - (3) Two bronze bonding lugs for each high mast lighting unit sized
    - (a) For the lightning protection conductors
    - (b) To fit on to the HMLT base bonding studs and under the nuts for a tight connection.
- F.3.b Grounding Systems for Pile Foundations**
- (1) Lightning protection conductors specified on the Plan
  - (2) Two exothermic grounding connectors for each pile foundation as shown on the Plan sized for the lightning conductors and designed for welding to the pile used on the Project
  - (3) Two bronze bonding lugs for each high mast lighting unit sized
    - (a) For the lightning protection conductors
    - (b) To fit on to the HMLT base bonding studs and under the nuts for a tight connection



**“WHAT’S NEW SINCE 2015”**  
**GROUNDING ELECTRODES INCLUDE GROUND RODS AND PLATES DEFINED IN MnDOT 3818**



**What's New Since 2015**  
**CHAPTER 14**  
**WIRING**

**“WHAT’S NEW SINCE 2015”**  
**MnDOT now requires that only split bolts be used for splicing neutral conductors in light pole bases.**



**“WHAT’S NEW SINCE 2015”**  
**SPEC. 3806 UNDERGROUND NON-DETECTABLE MARKING TAPE REQUIREMENTS**



**“WHAT’S NEW SINCE 2015”**  
**USE A 2 AMP FAST ACTING FIBER TUBE CARTRIDGE FUSE IN LUMINAIRE FUSE HOLDERS**



**“WHAT’S NEW SINCE 2015”**  
**SPEC. 3843 ANTI-OXIDANT JOINT COMPOUND**



*Provide anti-oxidant joint compound for conductor terminations as specified in the Contract to prevent corrosion and oxidation, and improve conductivity and the integrity of electrical connections.*

**“WHAT’S NEW SINCE 2015”**

SPECIFICATION LANGUAGE IN THE SPEC BOOK TO INSTALL DIRECT BURIED LIGHTING CABLE IN PVC OR HDPE CONDUIT WHEN NOT LOCATED UNDER TOP SOIL.

**2545.3.G.2**

*Install direct buried lighting cable in rigid PVC or HDPE conduit if located under bituminous, concrete, or other material not considered a top soil. Provide 3 in conduit if the contract does not specify size of conduit.*

**“WHAT’S NEW SINCE 2015”**

REMOVING DIRECT BUIRED LIGHTING CABLE SHOULD NOW BE A SEPARATE PAY ITEM ON ALL PROJECTS THAT REQUIRE CABLE REMOVAL

**Remove Direct Buried Lighting Cable**

Remove direct buried lighting cable as indicated in the Plan is measured by the linear foot. Direct buried lighting cable is paid for under pay Item No. 2104.503 (REMOVE DIRECT BURIED LIGHTING CABLE) at the Contract price per LINEAR FOOT, which price is compensation in full.

What's New Since 2016

Chapter 16  
SIGNAL AND LIGHT POLES

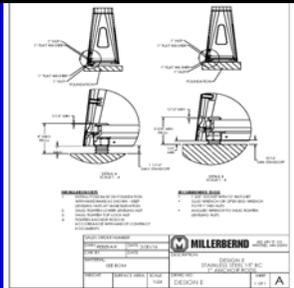
**“WHAT’S NEW SINCE 2016”**

**MnDOT ANCHOR ROD TIGHTENING REQUIREMENTS**



**“WHAT’S NEW SINCE 2016”**

MANUFACTURER HAS NEW INSTALLATION REQUIREMENTS..... AGAIN... FOR STAINLESS STEEL LIGHT POLES



1/2 INCH THICK WASHER OR SPACER USED WITH THE DESIGN E BASE



**“WHAT’S NEW SINCE 2016”**

“BRIDGE GREASE” IS LISTED ON MnDOT’s APL UNDER BRIDGE PRODUCTS



ANTI-SEIZE AND LUBRICATING COMPOUND CALLED “BRIDGE GREASE” WILL REPLACE ANTI-SEIZE LUBRICANT MIL-PRF-907E IN CONTRACT DOCUMENTS.

**"WHAT'S NEW SINCE 2016"**

Approved Rodent Intrusion Barrier Listed on MnDOT's APL



**"WHAT'S NEW SINCE 2016"**



FILL GAPS BETWEEN THE FOUNDATION AND ALUMINUM LIGHT POLE BASE THAT EXCEED AN 1/8 INCH WITH 100% CLEAR SILICONE .

**What's New Since 2015**

**CHAPTER 17**

**SIGNAL HEADS AND LUMINAIRES**

**"WHAT'S NEW SINCE 2015"**

**MnDOT REQUIRES DATE MARKING WITH A MACHINE PRINTED LABEL**

**2565.2**  
**L6 Signal and Pedestrian Indication Labeling**  
 Label the indications with the installation date as follows:  
 Place a date of installation on the back of the indication.  
 Provide labels for the date of installation on the back of the indication meeting the following requirements:  
 (1) Record the installation date on white self-adhering label,  
 (2) Use machine printed numbers,  
 (3) Black text 1/2 inch (12.7 mm) tall,  
 (4) Month/Year numeric format,  
 (5) Suitable for placement in wet locations,  
 (6) Paper based labels are not acceptable, and  
 (7) Place inside on the back of the indication.



**"WHAT'S NEW SINCE 2015"**



MnDOT Requires Backplates (Background Shields) with rolled edges.

**"WHAT'S NEW SINCE 2015"**

**UNIFORM APPEARANCE**

**8" / 12" LED Traffic Ball Signal Modules**

**Features & Benefits**

- Industry's lowest power for all colors
- Manufactured with anti capillary wires
- Meets or exceeds ITE intensity, color & uniformity specs, including 40°C/104°F requirements at 48VDC
- Conformal coated power supply
- Temperature compensated power supplies for longer LED life
- Secondary lens treatment for abrasion resistance
- Uniform appearance
- Patent No. 7,281,818 and other patents pending
- Expanded view radiation pattern suitable for sign wire and steep grade applications
- All units operate at 36-60VDC

Color	Part Number - Signal Lens	Part Number - Clear Lens	Length (mm)	Width (mm)	View Radius (mm)	View Radius (degrees)	Power Consumption (mW)	Power Consumption (mW) @ 45°C
<b>8" Module</b>								
Red	433-1170-0096L	433-1170-0096C	425	5	365	10	365	315
Yellow	433-2150-0096L	433-2150-0096C	590	5	480	10	480	420
Blue	433-2120-0096L	433-2120-0096C	590	5	210	10	210	180
<b>12" Module</b>								
Red	433-1270-0096L	433-1270-0096C	425	4	365	10	365	315
Yellow	433-2250-0096L	433-2250-0096C	590	4	480	10	480	420
Blue	433-2220-0096L	433-2220-0096C	590	4	210	10	210	180

MnDOT is considering 48 VDC Indications. Note the low power consumption

**“WHAT’S NEW SINCE 2015”**



**MnDOT HAS APPROVED LED REPLACEMENTS FOR VERTICAL MOUNT LUMINAIRES. A 90 DEGREE TENON MOUNT ADAPTOR LISTED ON MnDOT’S APPROVED/QUALIFIED PRODUCTS LIST MUST BE USED.**

**“WHAT’S NEW SINCE 2015”**



**MnDOT has High Mast LED Luminaires (Asymmetrical & Symmetrical) on the APL. All of the MnDOT high mast towers State wide have been retrofitted with LED luminaires.**

**“WHAT’S NEW SINCE 2015”**

**Light Emitting Diode (LED) roadway luminaires - 5 lane applications**

LED Luminaire 5 Lane Application Use on the Roadway Shoulder Operating Voltage Range of 120 through 277 Volts AC			
Product	Manufacturer	Manufacturer Address	Approval Date
CST COLLECTION 5468 State LED Area / Roadway Luminaire CST-B-3-D-U-T3-4KZ-10K-AP-MNDOT	Edco	1121 Highway 74 South Peachtree City, GA 30269	03/07/2019 Light Loss Factor = .81

LED Luminaire 5 Lane Application Use in the Roadway Center Median Operating Voltage Range of 120 through 277 Volts AC			
Product	Manufacturer	Manufacturer Address	Approval Date
CST COLLECTION 5468 State LED Area / Roadway Luminaire CST-B-3-D-U-T3-4KZ-10K-AP-MNDOT	Edco	1121 Highway 74 South Peachtree City, GA 30269	03/07/2019 Light Loss Factor = .81

**MnDOT has 5 Lane LED Luminaires on the APL.**

**What's New Since 2015**

**CHAPTER 20  
SERVICE EQUIPMENT**

**“WHAT’S NEW SINCE 2015”**

**NEC ARTICLE 110.24 REQUIRES MnDOT TO HAVE AVAILABLE FAULT CURRENT CALCULATIONS AT THE LINE SIDE OF THE METER SOCKET FOR SIGNALS AND LIGHTING.**



**ADDITIONALLY AND IN CONJUNCTION WITH 110.24 MnDOT REQUIRES A CONTRACTOR PROVIDED ARC FLASH WARNING LABEL IN ACCORDANCE WITH NFPA70E.**

**What's New Since 2015**

**CHAPTER 21  
TRAFFIC CONTROL SIGNAL  
CABINETS**

